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Examining the Factors Associated with Customer Satisfaction using Smartphones

Noora Shrestha

Department of Mathematics and Statistics, P.K.Campus, Tribhuvan University, Kathmandu, Nepal

Abstract**—** *This paper aims at identifying the key factors that influence customers' satisfaction to use smartphones. A survey questionnaire was designed to capture the opinions of the customers about a number of characteristics of their smartphone. Correlation and regression analysis were carried to study the association and influence of the factors with the customer satisfaction. The result shows that the predictors found to be the most important to improve customer satisfaction are product price, product attractiveness, perceived quality, and brand experience. It is observed that the brand experience is more rational cause for the customer satisfaction than other predictors. In addition, the study shows that female smartphone users are more likely to have positive attitude towards their phone compared to the male users. Further research can be conducted by expanding the scope of the study with additional predictors, more sample size, and moderating variables.*

Keywords**— Customer satisfaction, Regression analysis, Smartphones, Perceived quality, Brand experience.**

I. INTRODUCTION

Customer satisfaction survey may help business organization understand customer behavior, and particularly to identify and analyze customer desires, and expectations. A customer is a person who purchases a product or a service offered by an organization. The business organization allocates a significant amount on research and development to understand what their customers want in order to optimize the profits. Customer satisfaction studies are concerned with the level of satisfaction of customers, consumers, and users with a product or service offered by business house [1, 2]. Smartphone technology is progressing speedily around the globe and it is influencing customer's behaviors, their lifestyle, marketing, and business activities. Young customers are fond of mobile phones and now it is a key part of everyday life. As these mobile phones have become smarter, i.e. integrating multiple features that allow the user to do some activities that in the past was not possible unless using a computer or a personal digital assistant, such as sending and receiving e-mails, amending an office document [3].

A great number of studies have looked at customer satisfaction on various brands of smart phones. Smartphone users should balance the cost of purchasing with the level of offered features and functionalities. Product attractiveness is the most significant variable that aims customer to identify the satisfaction level. It sketches an overall image and impression of the brands. Brands experience is subjective, internal consumer responses (sensations, feelings, and cognitions and behavioral responses) induced by brands related incitement that are part of a brand design and identity, packaging, communications, and environments [4, 5].

The concept of customer satisfaction is allied to the perception of quality; however, it is different in the case of a product and of a service [2]. Customer's perception of overall quality or superiority of a product or service, according to the purpose of the product or service is in comparison with other alternatives is brands perceived quality. The perceived brand quality also affects positioning and profitability of the product in the market. It also helps customers to differentiate a brand from other brands based on its quality [6]. Smartphones present some common features with conventional mobile phone's characteristics such as phone style, physical design, color, size which can contribute positively in customer satisfaction [3]. According to Kotler and Keller (2006), customer satisfaction survey helps to learn about people's knowledge, beliefs, preference, and satisfaction, and to

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measure these magnitudes in the general population. The customer satisfaction results in improved customer loyalty towards the brands [7]. According to Paul (2005), there are many research agencies that claim their model or approach to measuring customer satisfaction will provide an organization with a competitive edge or some other business benefit [8].

In little more than a decade, the use of smartphone has taken deep roots in Nepalese society, creating new markets for the telecom products. The choice of people on mobile phone varies and so does their satisfaction level. The increased number of varieties has changed the attitude of people towards the brands of smartphones. For this reason, the present study examines the factors associated with the satisfaction level of smartphone users of Kathmandu. The findings of this paper will be valuable for all stakeholders to identify and better understand the key factors that influence smartphone users' satisfaction. This paper is structured into four sections. The first offers an introduction describing the conceptual foundation for the factors related to the smartphones. The second portrays the sample and the methodology employed. The third reports the result and interpretations. Lastly, the key conclusions, limitations, and implications are discussed in the context of future research.

II. METHOD AND MATERIAL

In order to understand the factors associated with the satisfaction level of smartphone users, 310 young adults who were Kathmandu residents and users of mobile phones were selected using convenience-sampling method. Respondents, that have used smartphones more than one year, demonstrated their consent by signing the consent form. A self-administered questionnaire, that has to be completed by a respondent without intervention of the researcher, was designed for collecting the data. The participants, iPhone users and Samsung users, were selected through personal contact, and email. An e-mail survey includes sending a questionnaire as a file attachment to potential respondents by email to complete offline and then e-mail back to the sender [8, 9].

The pilot test was done on a small group (n = 15) of young people to ensure that the questionnaire was comprehensible and appropriate, and that the questions were well defined, clearly understood and presented in a consistent manner. As a result, minor revisions were made to improve the content and make it more clear and consistent. The data were collected during October to December 2019. For the internal consistency (reliability) of the questionnaire, the most common measure Cronbach's alpha was found to be 0.806. It indicates a high level of internal consistency of the scale with this specific sample. Cronbach's alpha is most commonly used when there are multiple Likert questions in a survey questionnaire that form a scale and to determine if the scale is reliable [10]. The Likert-type format is premeditated to allow customers to respond in varying degrees to each item that depicts the service or product [11, 12].

The questionnaire comprises demographic information and other information related to the variable of concern. The customer satisfaction is considered as the dependent variable, whereas product price, product features, product attractiveness, perceived quality, and brand experience is considered to be independent variables. The product price and product feature are each composed of five items. Product attractiveness, perceived quality and customer satisfaction are each comprised of four items. Brand experience contained about three items. In many studies, the customer satisfaction is measured through categorical judgments, by using a Likert scale. Often, the numbers of possible levels used to represent the different satisfaction degrees are 4, 5, 7, or 10 [13]. For measurement purposes, a five-point Likert type ordinal scale with 2 referring to strongly agree, and 5 referring to strongly disagree were used. The average of the responses in the Likert scale corresponding to each variable is calculated for further analysis. The response rate of e-mail survey was made 100% by informing the recipients of email surveys about the use of their information. In the survey, respondents are repeatedly informed why their opinions are valued and how the information will be used throughout the study [11, 14].

In this cross-sectional study, descriptive statistics, correlation, and multiple regression analysis were employed to analyze the data [15]. The descriptive statistics were used to analyze customer satisfaction survey data by calculating the frequencies of customer responses to the questions [16]. More specifically, depending on the Likert scales, the percentage of customers were calculated who were strongly agreed, agree, neutral, disagree, and strongly disagree on the given statement. The data entry and analysis was done using SPSS version 23. Statistical significance was set at $p < 0.05$. Multicollinearity is checked with the value of the variance inflation factor (VIF) and tolerance level. VIF is used to measure how much the variance of the estimated regression coefficient is inflated if the independent variables are correlated. The value of VIF between 1 and 5 specifies that the variables are moderately correlated. If VIF is greater than 5, it

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indicates there is multicollinearity among the variables in the regression model [17, 18].

III. RESULTS

In the total of 310 respondents, n = 142, 45.8% were male whereas n= 168, 54.2% were female between the age group 17 to 27 years. Among the participants, n=172, 55.48% iPhone users and n=138, 44.5% Samsung users were observed. The correlation between independent variables i.e. price (P), product features (PF), product attractiveness (PA), perceived quality (PQ), and brand experience (BE) and dependent variable i.e. customer satisfaction (CS) was examined using Pearson's correlation coefficient. The Pearson's correlation coefficient shows the variable customer satisfaction is positively and significantly correlated with the variable brand experience (r= 0.431), product attractiveness (r=0.412), perceived quality (r =0.399), product price (r= 0.368), and product feature (r= 0.349) at p <0.01. For every individual item, percentage was calculated that helps to know the preference of the respondents.

Table 1 shows the response of the respondents on the question related to price. 30.3% of the total respondents strongly agreed with the statement that they consider price as an important factor while purchasing a new phone. 25.5% agreed that the phone is giving good value for the money they paid. 35.5% agreed that they are happy with the performance compared to the price they paid. 30.6% agreed that they associate the price with quality of the phone. 31% of the respondents agreed that they buy phone according to their budget.

Table 1. Price of Smartphone

Particular	(1)	(2)	(3)	(4)	(5)
Important factor to consider when	30.3 %	23.2 %	21.6 %	13.5 %	11.3 %
Offering good value for money	22.9 %	25.5 %	22.3 %	16.8 %	12.6 %
Good performance compared to	20%	35.5 %	19%	15.2 %	10.3 %
Associate price with quality	22.9 %	30.6 %	20%	14.5 %	11.9 %
Phone on a budget	28.4 %	31%	18.1 %	12.6 %	10%

(1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree)

The response related to the product feature is shown in **Table 2**. Out of total respondents, 29% were neutral to the statement that the phone has excellent features. 25.2% are neither agreed nor disagreed that they use all the applications of a phone. 28.4% agreed that the features included in their phone are enough for the time being. 33.5% agreed that the features provided are easy to use. 26.8% respondent agreed that the phone has maintained to keep the features up to date.

Table 2. Product Features

Particular	(1)	(2)	(3)	(4)	(5)
Has smart Features	16.8 %	24.8 %	29%	14.5 %	14.8 %
Use all mobile application	17.7 %	18.4 %	25.2 %	24.8 %	13.9 %
Enough features for time being	17.7 %	28.4 %	26.1 %	18.1 %	9.7%
Features easier to use	20.6 %	33.5 %	20.6 %	14.2 %	11%
Maintained the features up to date	21%	26.8 %	25.8 %	12.9 %	13.5 %

(1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree)

Table 3 displays the responses related to the product attractiveness. 28.4% respondent neither agreed nor disagreed to the brand they are using, provides a wide variety of designs. 35.5% agreed that they are satisfied with the color and the size of the phone they are using. 31.6% agreed to the statement that they think the phone they are using goes with their way of living and personality. 27.4% neither agreed nor disagreed with the statement that they like their phone, as it is new in the market.

Table 3. Product Attractiveness

Particular	(1)	(2)	(3)	(4)	(5)
Provides variety of design	21.9%	25.8%	28.4%	11.6%	12.3%
Satisfied with color and size	26.5%	35.5%	16.5%	11.3%	10.3%

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Matches with my personality	14.2%	31.6%	27.4%	12.3%	14.5%
Newest phone in the market	17.7%	22.3%	27.4%	20%	12.6%
Recommend to other	19%	28.7 %	25.2 %	13.25 %	13.9 %

(1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree)

The answer of the respondents to the question related to perceived quality is shown in **Table 4.** 34.8% of the respondents agreed that their phone is durable and 35.8% agreed that their phone is reliable. 23.9% of the respondents agreed that the company has provided different offers and after sale services. 32.6% of the respondents neither agreed nor disagreed with the statement that the quality of their phone is very high.

Table 4. Perceived Quality

Particular	(1)	(2)	(3)	(4)	(5)
Phone is durable.	19.4 %	34.8 %	23.5 %	12.9 %	9.4%
Phone is reliable.	16.5 %	35.8 %	26.5 %	11.6 %	9.7%
Provides offers and after sale service	14.2 %	23.9 %	24.5 %	21.6 %	15.8 %
Offers high quality	13.9 %	24.5 %	32.6 %	16.8 %	12.3 %

(1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree)

Table 5 illustrates the response of respondents to the question related to the brand experience. 35.8% of the respondents agreed with the statement that the phone they are using is very easy to use. 33.5% believe that they are having good time using their phone. 28.7% agreed to the statement that they would recommend the same brand to their friends and family.

Table 5. Brand Experience

Particular	(1)	(2)	(3)	(4)	(5)
Easy to use	16.8 %	35.8 %	24.5 %	11%	11.9 %
Having good time with phone	22.9 %	33.5 %	20%	13.9%	9.7%

Table 6 displays the response related to the customer satisfaction. 33.2% of the customers scoring agreed and satisfied with the decision of purchasing the phone.

Table 6. Customer Satisfaction

Particular	(1)	(2)	(3)	(4)	(5)
Satisfied with my purchasing decision	15.5 %	33.2 %	23.5 %	16.1 %	11.6 %
Meeting my expectations	16.1 %	28.4 %	26.8 %	15.2 %	13.5 %
Satisfied with the hardware and operational functions	14.2 %	28.1 %	28.4 %	16.5 %	12.9 %
Consider myself a loyal customer to the brand	17.7 %	23.5 %	26.8 %	16.8 %	15.2 %

(1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree)

In table 6, only 28.4% remain agreed that the phone is meeting all their expectations. 28.4% neither agreed nor disagreed with the statement that they are satisfied with the hardware and operational functionality of their phone. Not surprisingly, 26.8% agreed that they consider themselves a loyal customer to the brand they are using.

The survey question related to gender-based attitude towards the smartphone currently respondents are using is found interesting. Out of total male respondents, n=99, 69.7% has a positive attitude, whereas n=43, 30.3% have a negative attitude about their phones. Out of female respondents, n=122, 72.6% has a positive attitude whereas n=46, 27.4% have negative attitude on their mobile phones.

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Multiple Regression Analysis

Multiple regression analysis is used to identify key significant factors associated with the customer satisfaction. The model summary of multiple regression analysis using the stepwise method describes the overall fit statistics and indicates that the model is successful in predicting the dependent variable customer satisfaction with independent variable price (P), product features (PF), product attractiveness (PA), perceived quality (PQ), and brand experience (BE). The multiple correlation coefficient between the predictors and the outcome variables is R = 0.570. The adjusted R^2 is 0.316 with the R^2= 0.325. The coefficient of determination R^2=0.325 measures 32.5% of the variability in the customer satisfaction are accounted for by the independent variables. The adjusted R square =0.316 gives the idea of how well the model generalizes. The Durbin- Watson d= 2.14, which is between the two critical values of 1.5 < d< 2.5. It shows that there is no first order linear auto-correlation in the multiple linear regression data. The F-test of linear regression has the null hypothesis that the model explains zero variance in the dependent variable.

The F- test is highly significant ($p < 0.05$), thus, it can assume that the model explains a significant amount of the variance in customer satisfaction. In stepwise multiple linear regression analysis, there is a non-significant intercept but other variables are highly significant. The unstandardized coefficient (beta value) 0.226 for the variable perceived quality could be interpreted as: for every unit increase in perceived quality, there will be 0.226 point increase in customer satisfaction. The multicollinearity is checked in the multiple linear regression model, it is found that variance influence factor (VIF) is less than 5 for all variables. The lower values of VIF corresponding to the variables show that there is no problem of multicollinearity [16, 18].

In stepwise method, the variable product feature is not significant, $p > 0.05$. The four variables product price, product attractiveness, perceived quality and brand experience are significant predictors with 95% confidence interval. The equation for the regression line can be written as: Customer Satisfaction = 0.338 + (0.165 ×Product price) + (0.234 ×Product attractiveness) + (0.226×Perceived quality) + (0.229 × Brand experience). It can also be observed that brand experience has relatively higher impact on customer satisfaction than other predictors by comparing the standardized coefficients (β(BE)=0.236 versus β(P) =0.155, β(PA) =0.218, β(PQ) = 0.192).

IV. CONCLUSION

The paper examined the key factors that influence the customer satisfaction with special regard to young adults of Kathmandu who were smartphone users. The findings of this paper confirmed that product-price, product attractiveness, perceived quality, and brand experience are significant predictors to influence customer satisfaction. It is observed that brand experience is more rational cause for customer satisfaction than the other predictors. The result also demonstrates that female smartphone users are more likely to have a positive attitude towards their phone compared to the male users. The study focuses on iPhone and Samsung smartphone users and the sample is limited to Kathmandu. The findings of the study cannot be generalized for other smartphone users having different social-demographic background.

The study adds to the existing knowledge by providing some information related to the customer satisfaction. This study helps to learn about the customer's preferences, and satisfaction, and to measure these magnitudes in the general population. It would be possible to replicate the study in other sectors and countries with different brand of smartphones. Broaden research can be conducted by expanding the scope of the study with additional predictors, and more sample size.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this paper.

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